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NOTICE OF ALLOWANCE AND FEE(S) DUE

22850 7590 10/16/2008

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

ALUNKAL, THOMAS D

ART UNIT

PAPER NUMBER

2627

DATE MAILED: 10/16/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/680,109

10/08/2003

Shinji Ohta

243659US6

4453

TITLE OF INVENTION: DISK DRIVE AND PRE-PIT DETECTION METHOD

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	01/16/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** Mail Stop ISSUE FEE
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

22850 7590 10/16/2008

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
 1940 DUKE STREET
 ALEXANDRIA, VA 22314

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,109	10/08/2003	Shinji Ohta	243659US6	4453

TITLE OF INVENTION: DISK DRIVE AND PRE-PIT DETECTION METHOD

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	01/16/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
ALUNKAL, THOMAS D	2627	369-047270

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

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Date _____

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Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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10/680,109	10/08/2003	Shinji Ohta	243659US6	4453
22850	7590	10/16/2008	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			ALUNKAL, THOMAS D	
			ART UNIT	PAPER NUMBER
			2627	
DATE MAILED: 10/16/2008				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 501 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 501 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	10/680,109	OHTA ET AL.	
	Examiner	Art Unit	
	THOMAS D. ALUNKAL	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment After Non-Final filed 7/2/08.
2. ☒ The allowed claim(s) is/are 1,3 and 5-11.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. 7. <input type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____. |
|---|--|

/Thomas D Alunkal/
Examiner, Art Unit 2627

/Wayne Young/
Supervisory Patent Examiner, Art Unit 2627

Response to Arguments

Applicant's arguments, see Remarks, filed 7/2/08, with respect to the amendment of claims 1, 3, and 5-11 have been fully considered and are persuasive. The previous grounds of rejection have been withdrawn.

Regarding independent claims 1, 5, and 9, these claims have been amended to incorporate the features of canceled claim 4, which is drawn to an amplitude variation signal generator comprising a charging circuit for changing a capacitor in response to an increase in amplitude of the input push-pull signal, in a peak holding matter with a predetermined time constant, and a discharging circuit for discharging the capacitor such that the changed voltage of the capacitor falls down with a predetermined time constant whereby a signal corresponding to the charged level of the capacitor is output as the fundamental amplitude variation signal. The prior art does not disclose an amplitude variation signal generator, in conjunction with a pre-pit detecting device, as disclosed in amended claims 1, 5, and 9. Therefore, the claims are in condition for allowance.

Allowable Subject Matter

Claims 1, 3, and 5-11 are allowed.

The following is an examiner's statement of reasons for allowance: The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the independent claims 1, 5, and 9.

Regarding claim 1, the prior art taken either singularly or in combination fails to anticipate or fairly suggest a disk drive comprising: an optical head configured to emit a laser beam so as to illuminate a disk-shaped storage medium thereby writing or reading data on or from the disk-shaped storage medium, grooves serving as recording tracks being formed in a wobbling fashion on the disk-shaped storage medium, pre-pits being formed on lands between adjacent grooves, and the disk-shaped storage medium representing, using the pre-pits, address information indicating an address on the disk-shaped storage medium; a push-pull signal generator configured to generate a push-pull signal from reflected-light information detected by the optical head; ***an amplitude variation signal generator directly connected to the push-pull signal generator and configured to generate and output a fundamental amplitude variation signal indicating the fundamental amplitude variation of the push-pull signal, wherein the amplitude variation signal generator includes: a charging circuit for charging a capacitor in response to an increase in amplitude of the input-push pull signal, in a peak holding manner with a predetermined limited rising-up time constant, and a discharging circuit for discharging the capacitor such that the changed voltage of the capacitor falls down with a predetermined limited falling-down time constant whereby a signal corresponding to the charged level of the capacitor is output as the fundamental amplitude variation signal***; an offset signal generator configured to generate an offset signal; a reference signal generator connected to the amplitude variation signal generator and to the offset signal generator and configured to generate a reference signal by adding the offset signal received from the offset signal

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generator to the fundamental amplitude variation signal received from the amplitude variation signal generator; a pre-pit detector directly connected to the push-pull signal generator and to the reference signal generator and configured to compare the push-pull signal with the reference signal and outputting a comparison result as a pre-pit detection signal; and an address decoder for acquiring address information represented by the pre-pits, from the output of the pre-pit detector.

Regarding claim 5, the prior art taken either singularly or in combination fails to anticipate or fairly suggest a disk drive comprising: an optical head configured to emit a laser beam so as to illuminate a disk-shaped storage medium and detecting light reflected from the disk-shaped storage medium thereby writing or reading data on or from the disk-shaped storage medium, grooves serving as recording tracks being formed in a wobbling fashion on the disk-shaped storage medium, pre-pits being formed on lands between adjacent grooves, and the disk-shaped storage medium representing, using the pre-pits, address information indicating an address on the disk-shaped storage medium; a push-pull signal generator configured to generate a push-pull signal from reflected light information detected by the optical head; ***an amplitude variation signal generator directly connected to the push-pull signal generator and configured to generate and output a fundamental amplitude variation signal indicating the fundamental amplitude variation of the push-pull signal, wherein the amplitude variation signal generator includes: a charging circuit for charging a capacitor in response to an increase in amplitude of the input push-pull signal, in a peak holding manner with a predetermined limited rising-up time constant ,***

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and a discharging circuit for discharging the capacitor such that the changed voltage of the capacitor falls down with a predetermined limited falling-down time constant whereby a signal corresponding to the charged level of the capacitor is output as the fundamental amplitude variation signal; an offset signal generator configured to generate an offset signal; a reference signal generator connected to the amplitude variation signal generator and to the offset signal generator configured to generate a reference signal by adding the offset signal received from the offset signal generator to the fundamental amplitude variation signal received from the amplitude variation signal generator; a pre-pit detector directly connected to the push-pull signal generator and to the reference signal generator and configured to compare the push-pull signal with a reference signal and outputting a comparison result as a pre-pit detection signal; and an address decoder for acquiring address information represented by the pre-pits, from the output of the pre-pit detector.

Regarding claim 9, the prior art taken either singularly or in combination fails to anticipate or fairly suggest a method of detecting pre-pits formed on a disk-shaped storage medium, grooves severing as recording tracks being formed in a wobbling fashion on the disk-shaped storage medium, address information being represented by the pre-pits formed on lands between adjacent grooves, the method comprising the steps of: generating a push-pull signal from reflected-light information obtained when the disk-shaped medium is illuminated with a laser beam, the disk-shaped storage medium representing, using the pre-pits, address information indicating an address on the disk-shaped storage medium; ***generating and outputting a fundamental***

amplitude variation signal, indicating the fundamental amplitude variation of the push-pull signal based directly on the push-pull signal, using a circuit that serves as a peak-hold circuit with a limited rising-up time constant in a charging operation and also serves as a discharging circuit with a limited falling-down time constant in a discharging operation; generating a reference signal by adding an offset signal to the fundamental amplitude variation signal; comparing the push-pull signal with the reference signal and outputting a comparison result as a pre-pit detection signal; and acquiring address information from the pre-pit detection signal.

Dependent claims 3, 6-8, and 10-11 are allowed with their respective base claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yokoi et al. (US 6,487,149) discloses optical recording and reproducing methods for an optical disk. Yoshida et al. (US 6,603,726) discloses a pre-pit detection unit. Yanagawa et al. (US PgPub 2002/0114261) discloses an apparatus for synthesizing signals derived from an optical disc. Ueno (US PgPub 2003/0058764) discloses an optical disc device which performs land pre-pit detection. Kato et al. (US

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6,928,041) discloses a pre-pit detecting apparatus for optical recording medium. Ando et al. (US 5,943,313) discloses an information storage medium. Kaku et al. (US 6,188,654) discloses a method and apparatus for recording/reproducing by pre-pits detection. Nishimura et al. (US 6,785,207) discloses a wobble signal reproduction circuit. Nagasawa et al. (US 5,859,820) discloses an optical disk drive. Saito et al. (US 6,891,782) discloses an optical disk recording apparatus having a push-pull signal processing circuit. Hikima et al. (US 6,337,838) discloses a prepit detection unit. Yanagawa et al. (US PgPub 2003/0072230) discloses an information recording/reproducing apparatus and pre-pit detecting method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS D. ALUNKAL whose telephone number is (571)270-1127. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on (571)272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thomas D Alunkal/
Examiner, Art Unit 2627

/Wayne Young/
Supervisory Patent Examiner, Art Unit 2627